

**REMARKS**

Claims 1-30 and 35 are currently pending in the application. By this amendment, claim 34 is canceled and claims 1 and 2 are amended for the Examiner's consideration. The above amendments do not add new matter to the application and are fully supported by the specification. For example, support for the amendment to claim 1 is provided in Figure 2 and at paragraph 0026 of the specification. Reconsideration of the rejected claims in view of the above amendments and the following remarks is respectfully requested.

***Present Amendment is proper for entry***

Applicants respectfully submit that the instant amendment is proper for entry after final rejection. Applicants note that no question of new matter is presented nor are any new issues raised in entering the instant amendment of the claims and that no new search would be required. Moreover, Applicants submit that the instant amendment places the application in condition for allowance, or at least in better form for appeal. Accordingly, Applicants request the Examiner to enter the instant amendment, consider the merits of the same, and indicate the allowability of the present application and each of the pending claims.

***35 U.S.C. §102 Rejection***

Claims 1, 2, 34 and 35 were rejected under 35 U.S.C. §102(b) for being anticipated by U. S. Patent No. 6,583,047 to Daniels et al. This rejection is respectfully traversed.

The claimed invention is directed to a method for reducing resist poisoning. The method includes forming a first structure in a dielectric on a substrate, reducing amine related contaminants from diffusing out from the dielectric and the substrate prior to the formation of a second structure on the substrate. The reducing utilizes a plasma treatment which one of chemically ties up the amine related contaminants and binds,

traps, or consumes the amine related contaminants during subsequent processing steps. The second structure is formed on the substrate, and after the forming of the first structure, the process prevents poisoning of a resist layer in subsequent processing by the reducing.

The Examiner is of the opinion that the features of the claimed invention are shown in Figures 4a-4h of Daniels. Applicants are of the opinion that the features of claim 1, as now amended, are clearly not shown in Figures 4a-4h. By way of illustration, FIG. 4(a) shows a first dielectric material, optional etch stop material, and second dielectric material deposited onto a substrate. A layer of a photoresist material is then deposited on a top surface of the second dielectric layer, and a portion of the photoresist is imagewise removed to outline a via for the first dielectric layer, as shown in FIG. 4(b). FIG. 4(b) shows a formation of at least one via. After formation of the via, the balance of the photoresist layer is then removed (FIG. 4(c)). As shown in FIG. 4(d), a top surface of the second dielectric layer and a surface of inside walls and a floor of the via are modified to form a protective material. As further shown, an additional layer of a photoresist is deposited on the protective material, and a portion of the additional photoresist is removed to outline a trench for the second dielectric layer, as shown in FIG. 4(e).

However, Applicants submit that Daniels does not show reducing amine related contaminants from diffusing out from the dielectric and the substrate prior to a formation of a second structure on the substrate in the way claimed in claim 1. In Daniels, a top surface of the second dielectric layer and a surface of inside walls and a floor of the via are modified to form a protective material. There is no indication that such a modified layer can reduce the amine related contaminants from diffusing out from the dielectric and the substrate prior to the formation of a second structure on the substrate. In fact, Applicants submit that the modified layer will not provide such a feature, nor is the Daniels reference even related to providing such a feature. Applicants submit, in fact, that the Examiner has not shown that the modified layer will prevent amine related

contaminants from diffusing out from the dielectric and substrate prior to the formation of the second structure.

Applicants acknowledge, for example, that Daniels is concerned with the problem of "photoresist poisoning" (see col. 1, lines 57-59). Nor do Applicants dispute that Daniels discloses that the protective material can be formed "by exposure to CVD plasmas" which utilize "N<sub>2</sub>O" (see col. 16, lines 52-58). However, Applicants submit that Daniels contains no specific disclosure indicating that the protective material acts to reduce amine related contaminants from diffusing out from the dielectric and the substrate by either (a) chemically tying up the amine related contaminants, or (b) binding, trapping, or consuming the amine related contaminants. Nor does Daniels disclose, or even suggest, that after the forming of the first structure, preventing poisoning of a resist layer in subsequent processing by the reducing. Applicants emphasize that Daniels merely discloses the use of a protective or intermediate layer to "inhibit[s] the reaction which causes photoresist poisoning." See col. 2, lines 11-14.

Furthermore, the rejection of claim 34 is moot inasmuch as claim 34 has been canceled, and the rejection of claims 2 and 35 is improper at least because these claims depend from claim 1, which is believed to be allowable over the applied art of record.

Accordingly, Applicants respectfully request that the rejection over claims 1, 2 and 35 be withdrawn.

### **35 U.S.C. §103 Rejection**

Claims 3-4 were rejected under 35 U.S.C. §103(a) for being unpatentable over Daniels in view of ordinary skill in the art. This rejection is respectfully traversed.

The Examiner is of the opinion that the features of claims 3 and 4 are obvious in view of Daniels and those of skill in the art. Applicants do not agree with the Examiner, and requests that the Examiner provide a reference which shows the additional features not provided by Daniels. In fact, Applicants submit that the temperature of 400 degrees

Celsius will further enhance the properties of the amine reducing layer formed on the structure of the invention, a feature that is not obvious.

Also, Applicants submit that the features of Daniels do not even show the independently claimed invention recited in claim 1. As such, it is Applicants opinion that the features of the dependent claims 3 and 4 would not be obvious. For example, since Daniels does not show the plasma treatment on the substrate, in combination with the remaining features of claim 1, it would then not be obvious to show that the plasma treatment binds, traps or consumes the contaminants such that the contaminants will not diffuse out from either the substrate during the formation of the second structure. Also, as admitted by the Examiner, the Daniels reference does not show the features of any of claims 3 and 4.

Applicants also direct the Examiner's attention to the guidelines identified in M.P.E.P section 2141 which state that

“[i]n determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification. *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).”

As this section also clearly indicates,

“o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).”

Moreover, it has been legally established that

“[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) .... Although a prior art device may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so. 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).”

Additionally, it has been held that

“[a] statement that modifications of the prior art to meet the claimed invention would have been well within the ordinary skill of the art at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references.” *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

Additionally, Applicants submit that there is no motivation to modify Daniels in view of those of skill in the art in a manner which would render obvious Applicants' invention, and additionally, Applicants submit that there is no motivation or rationale disclosed or suggested in Daniels to modify Daniels in the manner suggested by the Examiner. The Examiner's opinion does not provide a proper basis for these features or for the motivation to modify or combine these documents in the manner suggested by the Examiner. This is based, in part, on the fact that all of the features of the claimed invention are not even shown in the Daniels references; that is, the modified surface will not protect out gasing. Therefore, Applicants submit that the invention as recited in at least independent claim 1 is not rendered obvious by any reasonable inspection and interpretation of the disclosure of the Daniels reference in view of those of ordinary skill in the art.

Accordingly, Applicants respectfully request that the rejection over claims 3 and 4 be withdrawn.

***Rejoinder of Withdrawn Claims***

Applicants submit that claim 1 is an allowable generic claim and request rejoinder of at least claims 5-12, upon indication that claim 1 and its related dependent claims directed to the same species are all in condition for allowance.

**CONCLUSION**

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Deposit Account No. 09-0456.

Respectfully submitted,  
Xiaomeng Chen, et al.



Andrew M. Calderon  
Registration No. 38,093

August 29, 2005  
Greenblum & Bernstein, P.L.C.  
1950 Roland Clarke Place  
Reston, Virginia 20191  
Telephone: 703-716-1191  
Facsimile: 703-716-1180